Owners Manual

TEC ELECTRONIC CASH REGISTER

FS-160 SERIES

TEC TOKYO ELECTRIC CO., LTD.

WARNING

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

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TO OUR CUSTOMERS

Thank you for choosing a TEC electronic cash register FS-160 series. This instruction manual provides a description of the functions and handling of the register and should be read carefully to obtain maximum performance. Since every consideration has been given to safety, there is no danger of damaging the machine by incorrect operation.

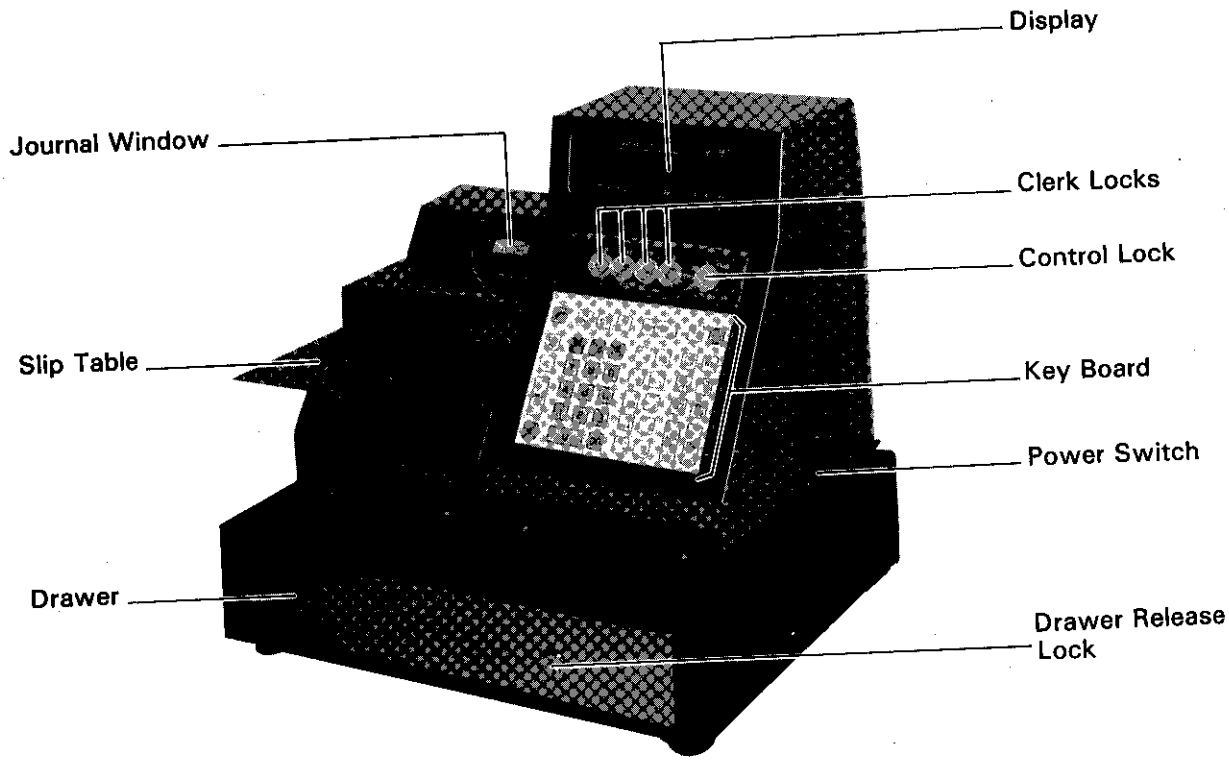
Please refer to this manual whenever you have any doubts concerning the machine. This machine has been manufactured under strict quality control and should give you many years of satisfaction. However, if the machine is damaged during transit, or there are any unclear points in this manual, please contact your local TEC representative.

- [] The specifications described in this manual may be modified by TEC, if necessary.
- [] Be sure to keep this manual for future reference.

PRECAUTIONS

1. The keys on the keyboard work with a light touch. Avoid pressing the keys too hard.
2. The keyboard is water-resistant. However, please avoid handling the machine with wet hands as much as possible.
3. Do not apply thinner or other volatile oils to the cabinet or other plastic parts. If dirty, wipe off with a piece of cloth soaked in neutral detergent and squeezed tightly.

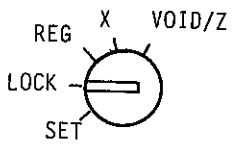
APPEARANCE AND NOMENCLATURE



[] **Power Switch** ... The power switch is provided at the righthand side of the cabinet. The AC power is turned on when the switch is pushed to ON, and turned off when the switch is pushed to OFF.

CONTROL LOCK, CLERK LOCKS, AND MODE SELECTOR KEYS

CONTROL LOCK



(POSITION) (FUNCTION)

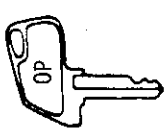
LOCK ..... The register operations are locked when the Control Lock is set to this position. Displays the current time.

REG ..... Normal cash register operations are carried out in this mode. However, operations that have been programmed to require the "VOID" position (Manager Intervention) cannot be done in this mode.

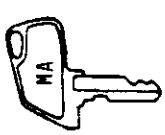
X ..... The sale totals can be read and the programmed data can be verified in this position.

VOID/Z ... Used to allow operations that have been programmed to require this position for Manager Intervention. Also used to read and reset all the resettable totals and counters.

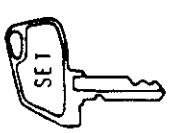
SET ..... In this position, the register will allow programming operations.



OP Key The OP Key is used by the cashier who operates the register. This key can access the positions of LOCK, REG, and X.



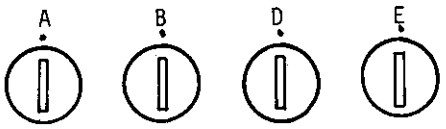
MA Key The MA Key is used by the store manager who will daily supervise the collection of money and the printout of transactions recorded by the register. This key can access the positions of LOCK, REG, X, and VOID/Z.



SET Key The SET Key is used by the programmer. This key can access the positions of LOCK and SET.

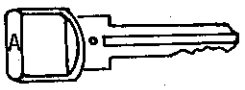
The keys can be inserted or pulled out at the LOCK or REG positions.

CLERK LOCKS



These locks are used to identify which clerk is operating the register.

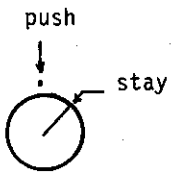
Clerk Keys (A, B, D, E)



Each clerk should keep his/her clerk key. The register will not operate in the REG mode unless one of these keys is inserted and pushed on or pushed-and-turned at the corresponding Clerk Lock. When multiple drawers are installed (max. 4 drawers), the clerk key used and the drawer to be opened on finalizing each sale are usually programmed to match. On a single-drawer machine, the drawer opens with any of these clerk keys.

Each of the keys may be inserted and pulled out in the neutral position marked with "." (point) in the above figure, and two ways are provided to set the Clerk Key to ON status:

1. PUSH-ON



When simply pushed on and immediately released, the Clerk Key is set to ON status. However, this ON condition will be cleared in any of the following conditions:

1) when the sale is finalized (with the CLERK tri-mark lamp still lit).
2) when another Clerk Key is pushed-on or pushed-and-turned for ON status.
3) when the Control Lock is turned to another position between sales.
4) when the power is turned off and then turned on again.

2. PUSH-AND-TURN

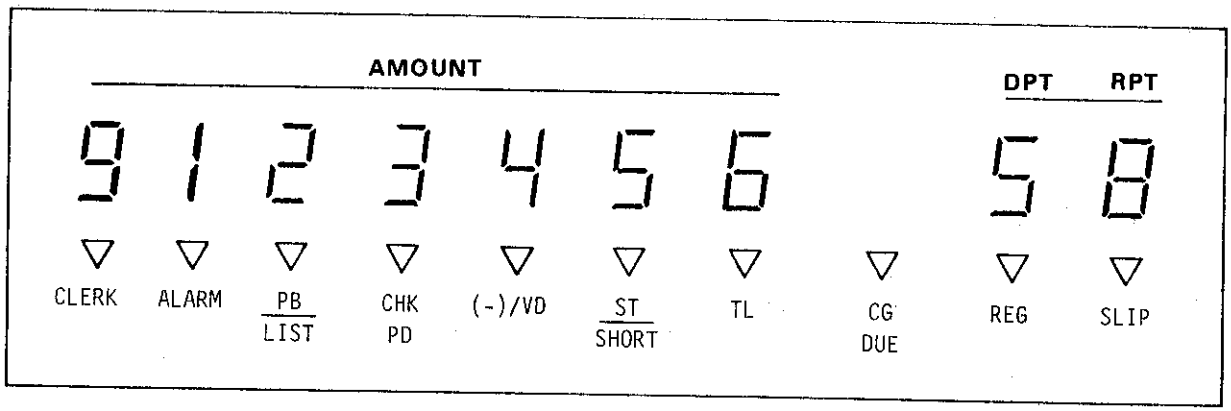
When pushed and turned to the right, the ON status is locked until it is turned back and released and another Clerk Key is set to ON.

When another Clerk Key is attempted to set to ON, an error will result.

If a Clerk Key has already set to ON and a sale is under way, another Clerk Key will cause an error if attempted to set to ON.

DISPLAY

The front display is located at the top of the register just above the keyboard. The rear display, located on the back side of the front display, has the same layout and content as the front display.



NUMERIC DISPLAY

AMOUNT (7 digits): Displays the numeric data, such as amount.

DPT (1 digit): Displays the code No. (1 to 0) which represents each Department Key (1 to 10). When Department No.10 is used, "0" is displayed instead of "10".

RPT (1 digit): Displays the repeat count of the same item.

MESSAGE DESCRIPTIORS (Tri-mark Lamps)

CLERK: Lights up when a Clerk Key is set to ON status.

ALARM: Lights up with an alarm buzzer to indicate that the last operation or numeric entry has resulted in an error. To clear the error condition, depress the [C] key.

PB / LIST: Lights up when a previous balance is entered through the [PB+] key, indicating that the sale contains a previous balance. It becomes unlit when the [SERVICE] key is depressed.
It also lights up when the [LIST] key is depressed, indicating that the Itemized Sale Mode and the Single-item Sale Mode are shifted from one to the other.

CHK PD: Lights up when an amount is entered through the [CHK PD] key, indicating that the amount is to be paid in this sale sequence.

(-)/VD: Lights up when a subtracting amount through such keys as [$ DISC] or [IC/VD] is entered.

ST / SHORT: Lights up when the [ST/TT] key is depressed and the subtotal amount of the sale is displayed.
It also lights when a short-tendering is operated with the balance still due is displayed.

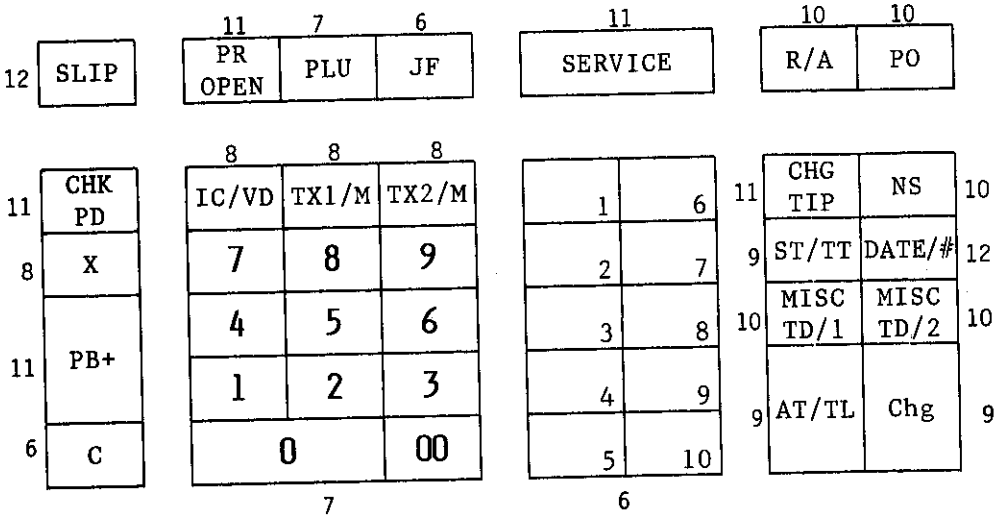
TL: Lights up on a finalizing operation with the total amount displayed when a sale is finalized without any amount tendered.

CG DUE: When an amount tendering operation has been performed, this lamp lights up with the change due displayed.

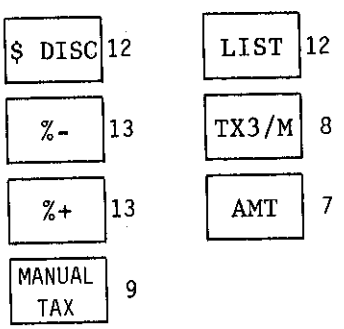
SLIP: Lights up when a slip has properly inserted and set to the slip printer.

KEYBOARD LAYOUT

The following is a typical keyboard layout for the FS-160 series. Since this series is designed to be capable of programming most of the keys in the most desired location on the keyboard, this is merely an example. Please contact your TEC representative if any other alternative or additional keys must be installed, referring to the description of the "FUNCTION OF EACH KEY" section. (The number attached to each key indicates the page number for the key description.)



OTHER KEYS THAT MAY BE INSTALLED ALTERNATIVELY OR ADDITIONALLY:



Keyboard Type: MICROMOTION KEYBOARD (Standard Feature)
REGULAR KEYBOARD (Option Feature)

FUNCTION OF EACH KEY

JF

JOURNAL FEED KEY ([JF])

This key is used to feed the journal roll. While the key is depressed, the paper feeds continously.

This key is operable in any position of the Control Lock except the "LOCK" position.

C

CLEAR KEY ([C])

This key is used to cancel the entries (numeric entry, [TX1/M], [TX2/M], [TX3/M] entry, [X] key entry, etc.) performed prior to depression of a motorized key.

This key is also used to clear the error condition caused by erroneous operation.

This key is operable in any position of the Control Lock except the "LOCK" position.

1 ~ 10

DEPARTMENT KEYS ([DEPT])

These are department keys through which sales items are registered. A maximum of 10 department keys and totalizers are available. Each of these keys may be programmed as "OPEN" department or "PRESET" department key.

Each department has the taxable or non-taxable status for each of Tax 1, Tax 2, and Tax 3 tables.

If the system option "Single-item DP" is selected, the depression of the department key finalizes the sale as a cash transaction.

In department operations, Roman numeral of the department number (I to X) is printed on slip and journal, and the department number (1 to 0) is displayed. In case of Department No. 10, "0" is displayed.

OPEN DEPARTMENT ([Open DEPT])

Enter the unit price before depressing the department key. Re-depressing the same department key causes the previous price entry to repeat itself except the case of VOID operation or QUANTITY EXTENSION operation.

This key has the HALC (High Amount Listing Capacity) and the LALC (Low Amount Listing Capacity).

Quantity extension operation is available by using the [X] key. The quantity should be from 1 to 99. The unit price should be under $999.99 in case of quantity extension operation.

PRESET DEPARTMENT ([Preset DEPT])

Depress the key without unit price entry. The price has already been preset on this key (4-digit; $0.00 to $99.99).

Quantity extension operation is available by using the [X] key. The quantity should be from 1 to 99. In case the quantity is 1-digit, the department key may be depressed after entering the quantity without a [X] key depression.

By depressing the [PR OPEN] key, the preset department key is changed into an open deparment temporarily. Thus a price different from the preset one may be entered through the numeric keys, just as an open department, if the [PR OPEN] key is depressed prior to the preset department key.

The repeat operation of the item registered with the [PR OPEN] key is not allowed.

PLU

PLU (Pirce-Look-Up) KEY ([PLU])

This key is used to register Price-Look-Up items. A PLU item has 3-digit PLU code (1 to 999), taxable or non-taxable status for each of Tax 1, Tax 2, and Tax 3 tables, 5-digit preset price for a preset PLU, and 2-digit linked department code (1 to 10). A maximum of 100 PLUs are programmable.

Depressing the [PLU] key after a PLU code entry causes the registration by the preset price automatically. In case of an open PLU item, it will not read the price automatically at the PLU code entry; after the PLU code entry the price should be entered and the [AMT] key should be depressed.

By depressing the [PR OPEN] key, a preset PLU is changed into an open PLU temporarily. In this case, the PLU operation sequence will be the same as an open PLU described in the above paragraph.

Re-depressing the [PLU[key causes the previous price entry to repeat itself in case of a preset PLU; the [AMT] key is re-depressed for the same purpose in case of an open PLU. The repeat operation is not possible for a temporarily-open Preset PLU or a VOID or QUANTITY EXTENSION for any PLU.

AMT

AMOUNT KEY ([AMT])

This key is used to enter the price for an open PLU or a preset PLU that has temporarily been open by the [PR OPEN] key. Refer to the description of the [PLU] key above.

7	8	9
4	5	6
1	2	3
0		00

NUMERIC KEYS (|___|)

These keys are used to enter numeric values such as amount, quantity, or code number.

Depressing the [00] key once is the same as depressing the [0] key twice consecutively.

IC/VD

ITEM CORRECT / VOID KEY ([IC/VD])

This key has two functions -- Item Correct function and Void function.

ITEM CORRECT FUNCTION (Last Line Void)

Depressing immediately after a department or PLU item entry, it functions as Item Correct key. All of itemizers and totals/counters affected by the previous entry to be corrected are restored. The dotted line is printed on the last printed line on the journal and the slip.

The [IC/VD] key should be depressed immediately after the department or PLU item to be corrected, but depressing the [C] key is still allowed before the item-correction.

Item Correct operation is available for Received on Account, Paid Out, Previous Balance, Chech Paid, or Manual Tax items.

VOID FUNCTION (Designated Line Void)

Depressing with a prior numeric entry, it functions as Void key. This key is used to void a previous department or PLU item entry (not necessarily the last item but also an item entered before the last item) within a transaction. This operation cannot cause the main itemizer (i.e. sale total) to go below zero.

Please note, especially when this key is used to void a preset department item once registered, that quantity "1" must be entered before the [IC/VD] key; depressing without the quantity will item-correct the last department or PLU item if any, as described in the ITEM CORRECT FUNCTION mentioned above.

This key has the option "Void Key MGR (VOID position) Compulsory". When this option is on, Void operation is allowed only at the VOID/Z position of the Control Lock.

X

QUANTITY EXTENSION (MULTIPLICATION) KEY ([X])

This key is used to enter the quantity for department or PLU item. The quantity should be from 1 to 99.

Enter the quantity, depress [X], then follow the normal department or PLU entry sequence. In case of a quantity extension using a preset department and when the quantity is 1-digit, the [X] key may be omitted.

TX1/M TX2/M TX3/M

TAX MODIFIER KEYS ([TX1/M], [TX2/M], [TX3/M])

These keys are used to reverse taxable or non-taxable status of Tax 1, Tax 2, and Tax 3 tables respectively for a department or PLU entry. And each Tax Modifier Key affects its repective tax only.

Depress the required Tax Modifier Key prior to an item of those mentioned above. The pre-programmed status of the item will be reversed from taxable to non-taxable, or vice versa.

MANUAL TAX

MANUAL TAX KEY ([MANUAL TAX])

This key is used to enter a tax amount manually. To operate, enter the tax amount, and depress this key. This tax amount is processed into the "Tax 3 & Manual Tax Total" of the financial memory and the clerk memory.

ST/TT

SUBTOTAL / TAXABLE TOTAL KEY ([ST/TT])

This key is used to print and read the total amount in the main itemizer (i.e. the sale total amount). Depressing repeatedly in the transaction, printing will occur only one time.

When the transaction has tax amount, this key is used to calculate tax and display the balance due including tax, while the balance due excluding the tax is printed on this stage in order to allow other item entries to follow. The tax amount will actually be printed on the finalizing stage.

AT/TL

CASH AMOUNT TENDER/TOTAL KEY ([AT/TL])

This key is used to record all cash paid on transactions and can finalize a sale operation. This key has dual functions that are Cash Tender Key and Cash Total Key.

Depress the [AT/TL] key without any numeric entry to get the total and finalize the sale. This is a Cash Total key function.

Depress the [AT/TL] key after entering the amount tendered to calculate the change and finalize the sale. This is a Cash Tender key function. In this case, when the amount tendered is smaller than the sale total, it prints the amount tendered and display the balance still due. If the [AT/TL] key operation results in finalizing the transaction, the cash drawer will open.

It has selective status as to Total Key Function, Tender Key Function, Over-tendering, Finalization for R/A, Drawer Open at Short-tendering, and Slip Compulsory.

Chg

CHARGE KEY ([Chg])

This key is used to record all charge total on transactions, and can finalize a sale operation. This key has the Total Key function and the Tender Key function.

Depress the [Chg] key without a numeric entry to get the total and finalize a sale when using as Total Key.

When using as Tender Key, depress this key after entering the amount tendered to calculate the change and finalize the sale. In this case, when the tendering amount is smaller than the sale total, it prints the amount tendered and display the balance still due.

It has the same selective status as described for the [AT/TL] key.

LIST

LIST KEY ([LIST])

This key is used to reverse the Single-item DP / Itemized DP operation option by depressing before department or PLU transaction.

In case of the Single-item DP system, by depressing this key the itemized department and PLU operation can be done. In case of the Itemized DP system, by depressing it the single-item department and PLU operation can be done.

SLIP

SLIP KEY ([SLIP])

This key is used to change the gap condition of the slip printer. When the gap is closed, depressing this key causes the gap to be opened; and when it is open, depressing this key causes it to be closed. To use it for this purpose, this key should be depressed without numeric entries.

This key is also used to feed the slip paper to the appropriate position. When the number of lines to be fed is entered before this key entry, the slip paper is fed as much as the entered number of lines.

DATE/#

DATE/# KEY ([DATE/#])

This key is a dual function key of Date Key and # Key. If depressed without numeric entries, this key is the Date Key. And, if depressed after numeric entries, it is the # Key.

The Date Key function is used to print the date and the register number on slip and journal. After depressing this key, this transaction should be the itemized transaction. When the options "Date Print" and "Consecutive No. Print" are both on, the date and the consecutive No. print automatically for every transaction; therefore, the Date Key function is not usuaully necessary.

The # Key function is used to print any non-add numbers on slip and journal as future referece for Customer No., Table No., Check No., etc. The maximum digits of entered numbers are 6 digits. The number entered is shown by the "#" symbol on the slip and journal.

$ DISC

DOLLAR DISCOUNT KEY ([$ DISC])

This key is used to subtract an amount from the sale total such as a discount during a sale. The amount more than the sale total is prohibited.

To operate, enter the discount amount, and depress this key.

%-

PERCENT DISCOUNT KEY ([%-])

This key is used to subtract a % rate from a sale. When the % rate that is pre-programmed is used, this key should be depressed without numeric entry. When the % rate is different from the pre-programmed one, this key should be depressed after the manual rate entry.

When the option "% rate manual entry prohibited" is on, this key functions only with the pre-programmed rate.

Please note the following in entering a manual % rate:

When the option "Integral" % rate manual entry is selected:
Rate range allowed: 1 to 99% ... Enter 1 to 99.

When the option "down to 1 decimal digit" is selected:
Rate range allowed: 0.1 to 99.9% ... Enter 1 to 999.

When the option "down to 2 decimal digits" is selected:
Rate range allowed: 0.01 to 99.99% ... Enter 1 to 9999.

%+

PERCENT CHARGE KEY ([%+])

This key operates the same as the [%-] key except that the % rate will add to instead of subtracting from the sale.

MISC TD/1 | MISC TD/2 **MISCELLANEOUS TENDER 1, 2 KEYS** ([MISC TD/1], [MISC TD/2])

These keys are used to record other medias than cash and charge (check, charge cards, etc.) paid on transactions, and can finalize a sale operation.

Operations and selective status for this key are the same as described for the [AT/TL] or [Chg] key.

NS **NO-SALE KEY** ([NS])

This key is used to open the cash drawer for the purpose of making change. When the multi-drawer function is selected, it will open only operating clerk's drawer.

R/A **RECEIVED ON ACCOUNT KEY** ([R/A])

This key is used to record received-on-account payments and will add the cash-in-drawer total accordingly. Several received-on-account entries in one receipt are allowed.

Enter the amount and depress [R/A]. This sequence may be operated multiple times alternating the amount. The entries may be finalized by [AT/TL] or other media keys that have the status "Finalization for R/A Allowed". This operation can be done when the register is outside a sale.

Quantity Extension or Repeat are not operable. Item Correct operation is allowed for R/A items but Void operation is prohibited.

This key is also used to record the loan total when the Control Lock is in the VOID/Z position, and will add the cash-in-drawer total accordingly. This amount affects the "R/A 2" total also.

PO **PAID OUT KEY** ([PO])

This key is used to record paid-out items and will reduce the cash-in-drawer total accordingly. Several paid-out entries in one receipt are allowed.

Enter the amount and depress [PO]. This sequence may be operated multiple times alternating the amount. The entries may be finalized by [AT/TL] (cash) only. This operation can be done when the register is outside a sale.

Quantity Extension or Repeat are not operable. Item Correction operation is allowed but Void operation is prohibited.

This key has the option "Paid Out Key MGR (VOID position) Compulsory". When this option is on, paid-out operation is allowed only in the VOID/Z position of the Control Lock.

PR OPEN

PRESET OPEN KEY ([PR OPEN])

This key is used to change the preset price of a preset department or preset PLU item temporarily without affecting the preset price memory.

After depressing this key, only department or PLU entry is allowed.

Refer to descriptions in the [DEPT] and [PLU] keys as to operation details.

PB+

PREVIOUS BALANCE KEY ([PB+])

This key is used to enter the previous balance of any guest check that has once been registered but not yet to be paid. Depressing with no numeric entries functions to make a new check. Depressing after numeric entries (previous balance amount) functions to add the orders to the customer check.

Multiple PB entries, Item Correct operation, and Void operation are allowed.

Finalizing this transaction without payment is the [SERVICE] key, and the [PB+] key can be operated any time before depressing the [SERVICE] key. As the [PB+] key is used to add the orders, this transaction can not be finalized by any media key. In case of payment operation, the [CHK PD] key is used to enter the previous balance amount as top item of the sale sequence.

SERVICE

SERVICE KEY ([SERVICE])

This key is used to finalize the previous balance operation. When depressing this key, the new balance (Previous Balance + Total Amount in This Transaction + Taxes) is printed on journal and slip.

CHK PD

CHECK PAID KEY ([CHK PD])

This key is used to finalize the guest check sequence. After depressing this key with an amount entry (the guest's previous balance amount), only finalizing operation for payment is allowed.

Multiple operation and Item Correction operation are allowed, but Void operation is prohibited.

CHG TIP

CHARGE TIP KEY ([CHG TIP])

This key is used to record the tip amount paid by the [Chg], [MISC TD/1], or [MISC TD/2] key. This key should be depressed with numeric entries (tip amount), and after this key entry [AT/TL] key operation is prohibited.

REGISTERING PROCEDURE FOR SALES

The following are patterns for actual registering operations. In the following examples, "|___|" indicates an input through the numeric keys, "[ ]" indicates a depression of the function key, and "---" indicats other registering and/or finalizing operations.

For the following operations, set the key-locks as in the following:

Clerk Lock: The operating clerk's Clerk Key must be set to ON.

Control Lock: REG Position ... for normal operations

VOID/Z Position ... for LOAN Operation

REG or VOID/Z ... for: . [IC/VD] used as Void Key
. [PO] Key
→ depending on the program status for each key.

NO-SALE (Control Lock: REG) Allowed only outside a sale

[NS]

LOAN (Control Lock: VOID/Z) Allowed only outside a sale
└─if in "REG" mode, it will result in Received on Account operation.

|Loan Amount| [R/A] ⟶ (|Amount|) [AT/TL]
or other media keys.
↑ Repeatable

DEPARTMENT (Control Lock: REG)

When "Single-item DP" option is selected:

|Price| [Open DEPT]

[Preset DEPT]

[PR OPEN] |Price| [Preset DEPT]

Quantity Extension:

|Quantity| [X] |Unit Price| [Open DEPT]

|Quantity| [X] [Preset DEPT]
└─may be omitted when the quantity is 1-digit.

|Quantity| [PR OPEN] [X] |Unit Price| [Preset DEPT]

Immediately finalized as cash sale automatically.

NOTE: If itemized sale registration is necessary, depress [LIST]. The multiple department/PLU items may be entered within one sale. The sale will then be finalized by media keys, just as in the case of "Itemized-DP" option described below.

When "Itemized-DP" option is selected:

Opeations are the same as listed in the case of the "Single-item DP" option described on page 14, except that the sale is not finalized until a media key is operated. Thus multiple department/PLU items can be entered within one sale.

NOTE: If [LIST] is depressed first, each department (or PLU) operation sequence will be a "Single-item DP" operation and immediately finalized as cash sale, as described in the "Single-item DP" option on page 14.

PLU (Control Lock: REG)

|Preset-PLU Code| [PLU] → ---

|Open-PLU Code| [PLU] |Price| [AMT] → ---

[PR OPEN] |Preset-PLU Code| [PLU] |Price| [AMT] → ---

Qunatity Extension:

|Quantity| [X] |Preset-PLU Code| [PLU] → ---

|Quantity| [X] |Open-PLU Code| [PLU] |Unit Price| [AMT] → ---

|Quantity| [X] [PR OPEN] |Preset-PLU Code| [PLU] |Unit Price| [AMT] → ---

NOTE: The sale-finalization rule for PLUs is the same as described for DEPARTMENT entries. (That is, if the "Single-item DP" option is selected, the sale is immediately finalized.) The [LIST] key operation is also applied to PLU opeations.

REPEAT (Control Lock: REG)

Operable in the Itemized sale mode only. (If "Single-item" option is selected, the [LIST] key must be depressed first.)

|Price| [Open DEPT] [same DEPT] [same DEPT] ... → ---

RPT Count "2" | RPT Count "3"

|Preset-PLU Code| [PLU] [PLU] [PLU] ... → ---

|Open-PLU Code| [PLU] |Price| [AMT] [AMT] [AMT] ... → ---

SUBTOTAL, TAXABLE TOTAL READ (Control Lock: REG) for Itemized sale only

--- → [ST/TT] → --- ..... The sale total of the items registered so far is displayed. When any tax is due, the sale total amount displayed includes the tax amount.

SALE FINALIZATION (Control Lock: REG) for Itemized sale only

--- → ([ST/TT]) → (|Amount Tendered|) [AT/TL] (Cash Sale)

--- → ([ST/TT]) → (|Amount Tendered|) [Chg] (Charge Sale)

--- → ([ST/TT]) → (|Amount Tendered|) [MISC TD/1] or [MISC TD/2] (depending on the payment media)

Multi-tendering (Short - tendering repeated using the same media)

ex.) --- → ([ST/TT]) → |Amount Tendered| [AT/TL] (Short-tendering)
→ |Amount Tendered| [AT/TL] (still short)
→ (|Amount Tendered|) [AT/TL]

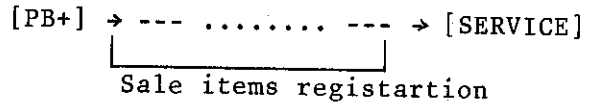
Split-tendering (Short-tendering repeated using different medias)

ex.) --- → ([ST/TT]) → |Cash Amount Tendered| [AT/TL] (Short-tendering)
→ |Misc 1 Amount Tendered| [MISC TD/1] (still short)
→ (|Charge Amount Tendered|) [Chg]

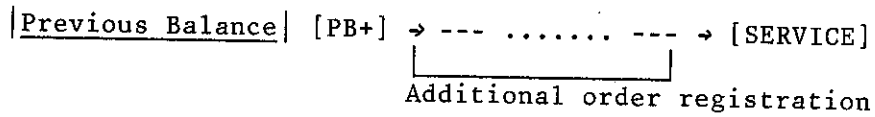
NOTES: 1. In both Multi-tendering and Split-tendering operations, the sale is finalized on reaching the sale total amount.
2. If a media key is depressed without an amount tendering entry (if the key functions as Total Key), the sale is then finalized on that stage processing the balance due into that media.
3. Media keys that are programmed with the status "Short-tendering Prohibited" cannot be used for short-tendering operations.

PREVIOUS BALANCE, CHECK PAID (Control Lock: REG) for Itemized sale only

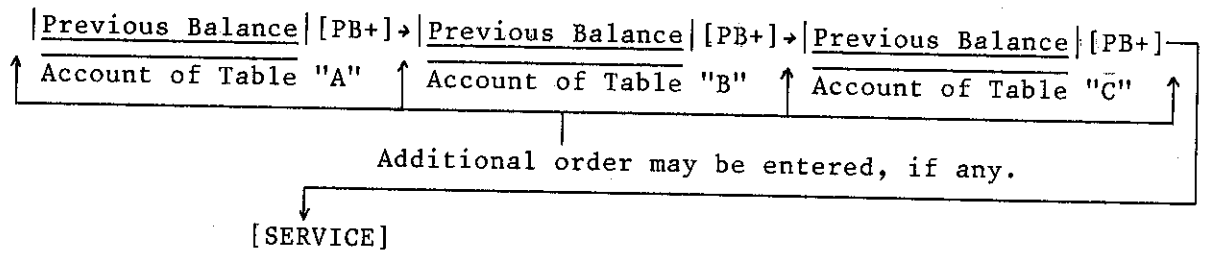
New Customer Check Open, New Order (with no payment):



Additional Order (with no payment):



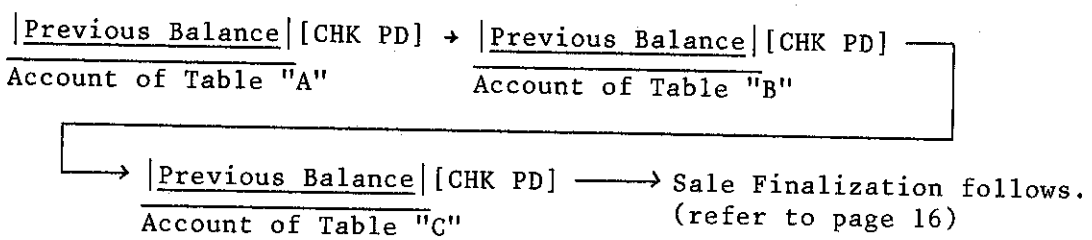
Check Gathering on No-payment Stage (Allowed if "Multi-PB Alowed" option is on.)



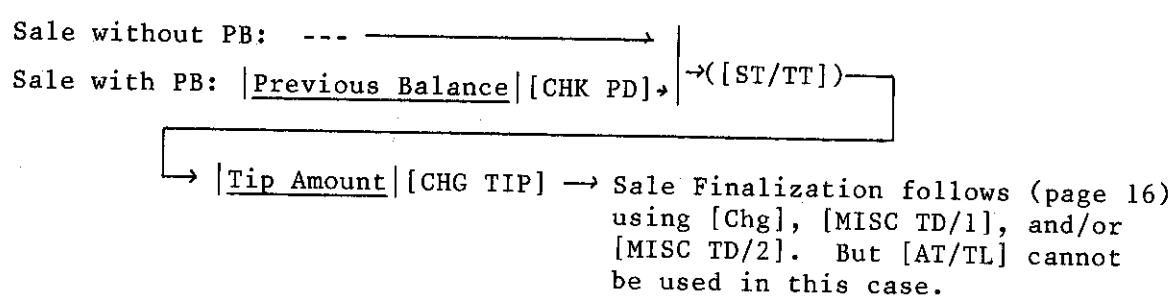
Normal Check Paid:

|Previous Balance| [CHK PD] → Sale Finalization follows (refer to page 16)

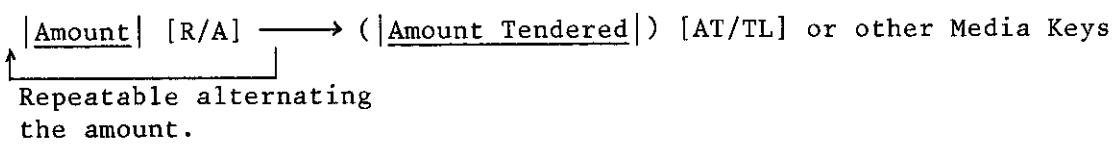
Check Gathering at Payment (Allowed if "Multi Check Paid" option is on)



CHARGE TIP (Control Lock: REG) in Itemized sale only

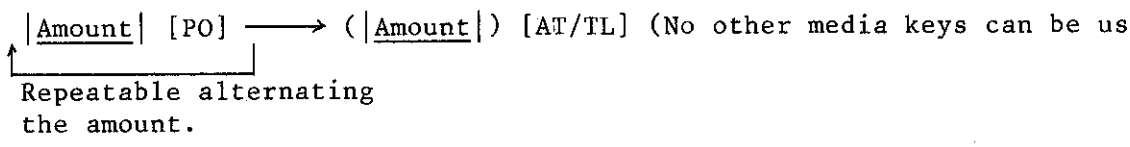


RECEIVED ON ACCOUNT (Control Lock: REG) Allowed only outside a sale.



NOTES: 1. Multi-tendering and Split-tendering operations (page 16) can also be applied.
2. Only the media keys that have been programmed to allow R/A entries can finalize R/A items.

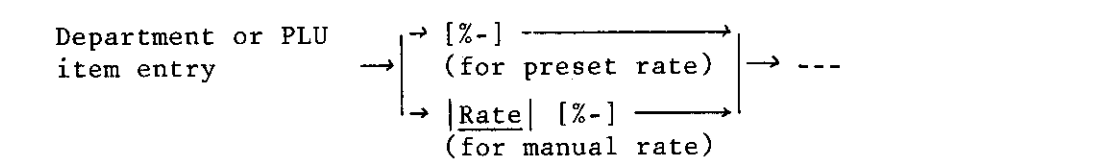
PAID OUT (Control Lock: REG, or VOID/Z if so programmed) Outside a sale only



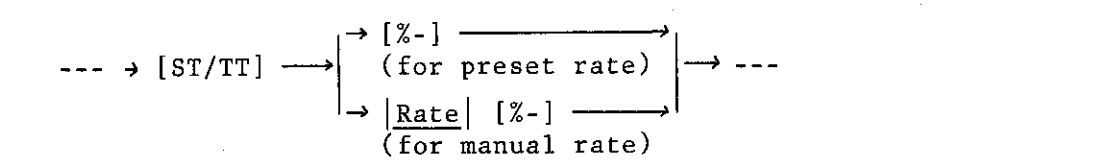
DOLLAR DISCOUNT (Control Lock: REG) in Itemized Sale mode only

PERCENT DISCOUNT (Control Lock: REG) in Itemized Sale mode only

To subtract from an individual Department or PLU item:



To subtract from the sale total or subtotal:



NOTES on Manual Rate Entry:

1. Manual rate entries may be prohibited by a program option.
2. The digit handling for the manual rate entry differs depending on the option selected:
   With "integral only" option:
   Enter 1 (=1%) to 99 (=99%).
   With "down to 1 decimal digit" option:
   Enter 1 (=0.1%) to 999 (=99.9%).
   With "down to 2 decimal digits" option:
   Enter 1 (=0.01%) to 9999 (99.99%).

PERCENT CHARGE This operates the same as PERCENT DISCOUNT, except that the rate will add to instead of subtracting from the sale.

TAX MODIFICATION (Control Lock: REG)

```
[TX1/M] ... to reverse the Tax 1 taxable/non-taxable status
[TX2/M] ...     "          Tax 2              "
[TX3/M] ...     "          Tax 3              "
```

Depress Tax Modifier Key(s) for the requirement as described above, prior to a department or PLU entry sequence (must be depressed at least before the last key of the sequence.)

ex.) [TX1/M] |Price| [Open DEPT] → ---

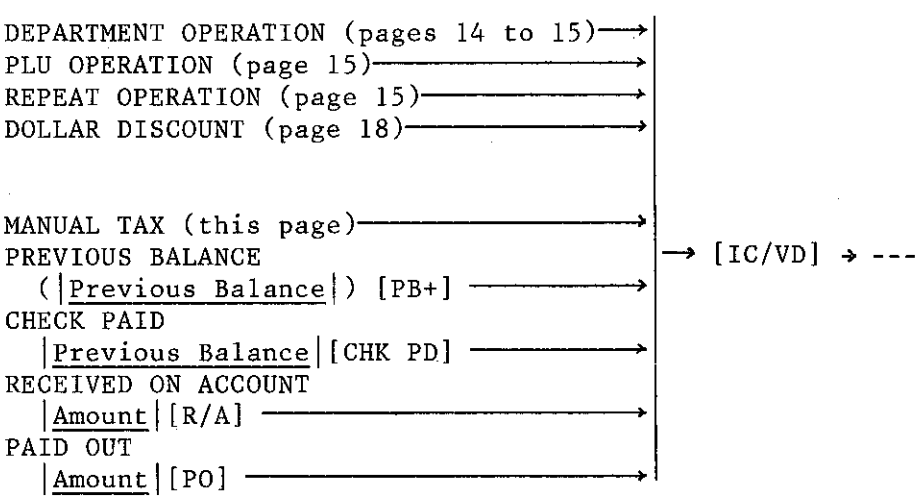
[TX/3] [Preset DEPT] → ---

|Preset-PLU Code| [TX1/M] [TX2/M] [PLU] → ---

MANUAL TAX (Control Lock: REG) in Itemized sale mode only

--- → |Tax Amount| [MANUAL TAX] → ---

ITEM CORRECT (Control Lock: REG) in Itemized sale mode only



NOTE: When Item Correct is operated after a REPEAT operation, only the last item of the repeated will be deleted.

VOID (Control Lock: REG, or VOID/Z if so programmed) in Itemzed sale mode only

To void one item:

--- → |Price|[IC/VD][Open DEPT] → ---

--- → |1|[IC/VD]([X])[Preset DEPT] → ---
└ Quantity "1"

--- → [PR OPEN]|Price|[IC/VD][Preset DEPT] → ---

--- → |Preset-PLU Code|[IC/VD][PLU] → ---

--- → |Open-PLU Code|[IC/VD][PLU]|Price|[AMT] → ---

--- → [PR OPEN] |Preset-PLU Code|[IC/VD][PLU]|Price|[AMT] → ---

--- → |Previous Balance|[IC/VD][PB+] → ---

To void Quantity Extension operation of Department or PLU:

--- → |Quantity|[IC/VD][X]|Unit Price|[Open DEPT] → ---

--- → |Quantity|[IC/VD][X][Preset DEPT] → ---

--- → [PR OPEN]|Quantity|[IC/VD][X]|Unit Price|[Preset DEPT] → ---

--- → |Quantity|[IC/VD][X]|Preset-PLU Code|[PLU] → ---

--- → |Quantity|[IC/VD][X]|Open-PLU Code|[PLU]|Unit Price|[AMT]→ ---

--- → [PR OPEN]|Quantity|[X]|Preset-PLU Code|[PLU]|Unit price|[AMT]→---

NON-ADD NUMBER PRINT (Control Lock: REG)

(--- →) |Number| [DATE/#] → ---
max. 6 digits

DATE PRINT (Control Lock: REG)

[DATE/#] → ---

SLIP PRINT (Control Lock: REG)

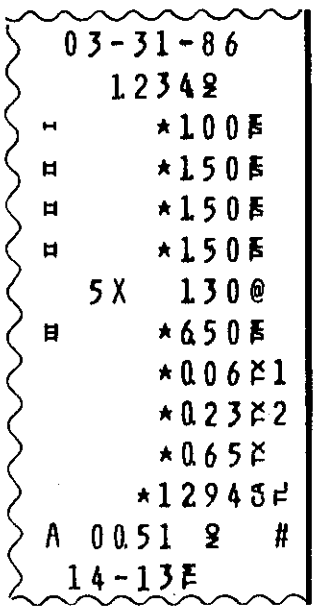
1) Depress [SLIP] to open the gap of the Slip Printer to open it if it is closed.
2) Insert the slip.
3) Set the slip to the appropriate position, referring to the two lines carved on the slip print table to indicate the print line position.
4) Make sure that the "SLIP" trimark lamp is lit.
5) The [SLIP] key may be depressed here to close the gap to secure the slip. Or, the gap will automatically be closed when registration starts.
6) Start the registration.
7) Finalize the registration. The gap will automatically be opened to enable the slip withdrawal.

NOTES: 1. The slip may be withdrawn between Steps 6) and 7) if only some designated items but not all are necessary to print. In need of this, withdraw the slip after depressing the [SLIP] to open the gap when no more slip printing is necessary.
2. Line feed value may be set between Steps 5) and 6). Enter the number of lines to be fed above the print start line, and depress [SLIP]. Then the slip will feed up to the designated print start position. This feature is useful when one slip is to be used to record a customer's account from sale to sale.

-- REGISTERING PRINT SLIP SAMPLES --

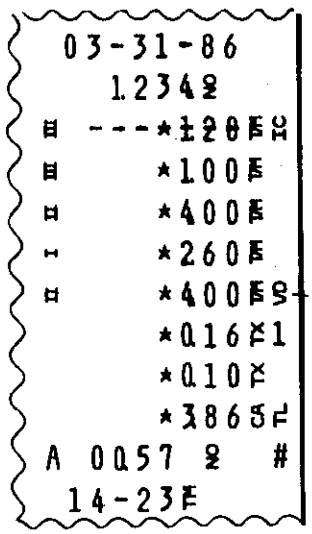
(All samples are in Itemized Sale mode.)

DEPARTMENT, REPEAT, QUANTITY EXTENSION



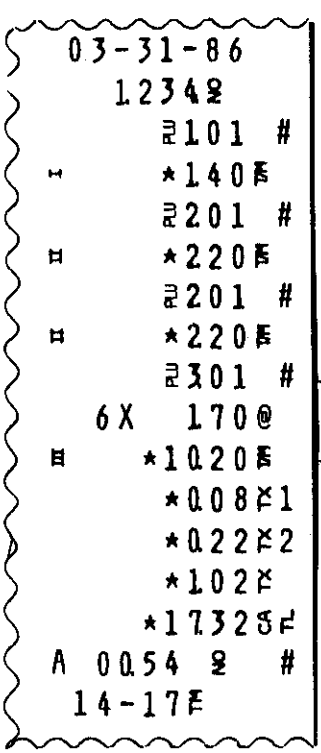
Date: March 31, 1986
Register No. 1234
Dept.1 $1.00 taxable
Dept.2 $1.50 taxable
Repeat of the Dept.2
" "
5 x $1.30@
= $6.50 into Dept.3
Tax 1 / Tax 2 / Tax 3 — when "Taxes Separate Print" option is on.
Finalized as cash
Clerk ID / Consecutive No.
Current Time

ITEM CORRECT, VOID



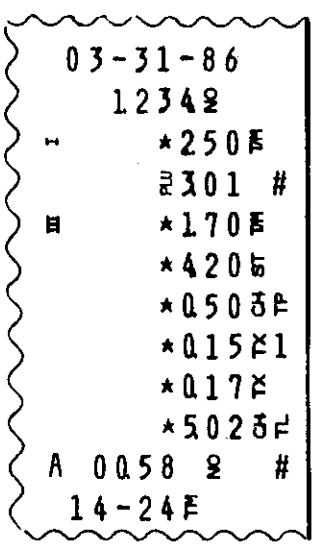
Dept.3 $1.20, Item-corrected
Voiding the third item (Dept.2 $1.00)

PLU, REPEAT, QUANTITY EXTENSION



PLU No.101
Link Dept.1 $1.40 txbl
PLU No.202
Link Dept.2 $2.20 txbl
Repeat of the above PLU
PLU No.301
6 x $1.70@ = $10.20
Linked Dept. 3

CHARGE TIP, CHARGE SALE



Charge Tip
Finalized as charge

NON-ADD NUMBER, MISC 1 MEDIA SALE

```
 03-31-86
    1234
    111111  #
       *1.20
       *3.50
       *0.21 1
       *0.06 2
       *4.97 1
A  00.64     #
 14-32
```

Non-add #111111

Finalized as Misc. 1

PERCENT CHARGE, PERCENT DISCOUNT

```
 03-31-86
    1234
       *1.35
   10.      %
       *0.14
       *2.30
       *3.79
   20.      %-
       *0.76  -
       *0.14 1
       *0.07 2
       *0.14
       *3.38
A  00.61     #
 14-28
```

10% added to the above Dept.5 item (=$0.14)

Subtotal

20% subtracted from the above subtotal ($0.76)

MISC 1 MEDIA TENDER, CHANGE COMPUTATION

```
 03-31-86
    1234
    111111  #
       *1.50
       *2.30
       *3.80
       *0.09 1
       *0.12 2
      *10.00 1
       *5.99
A  00.65     #
 14-33
```

Misc.1 $10.00 tendered

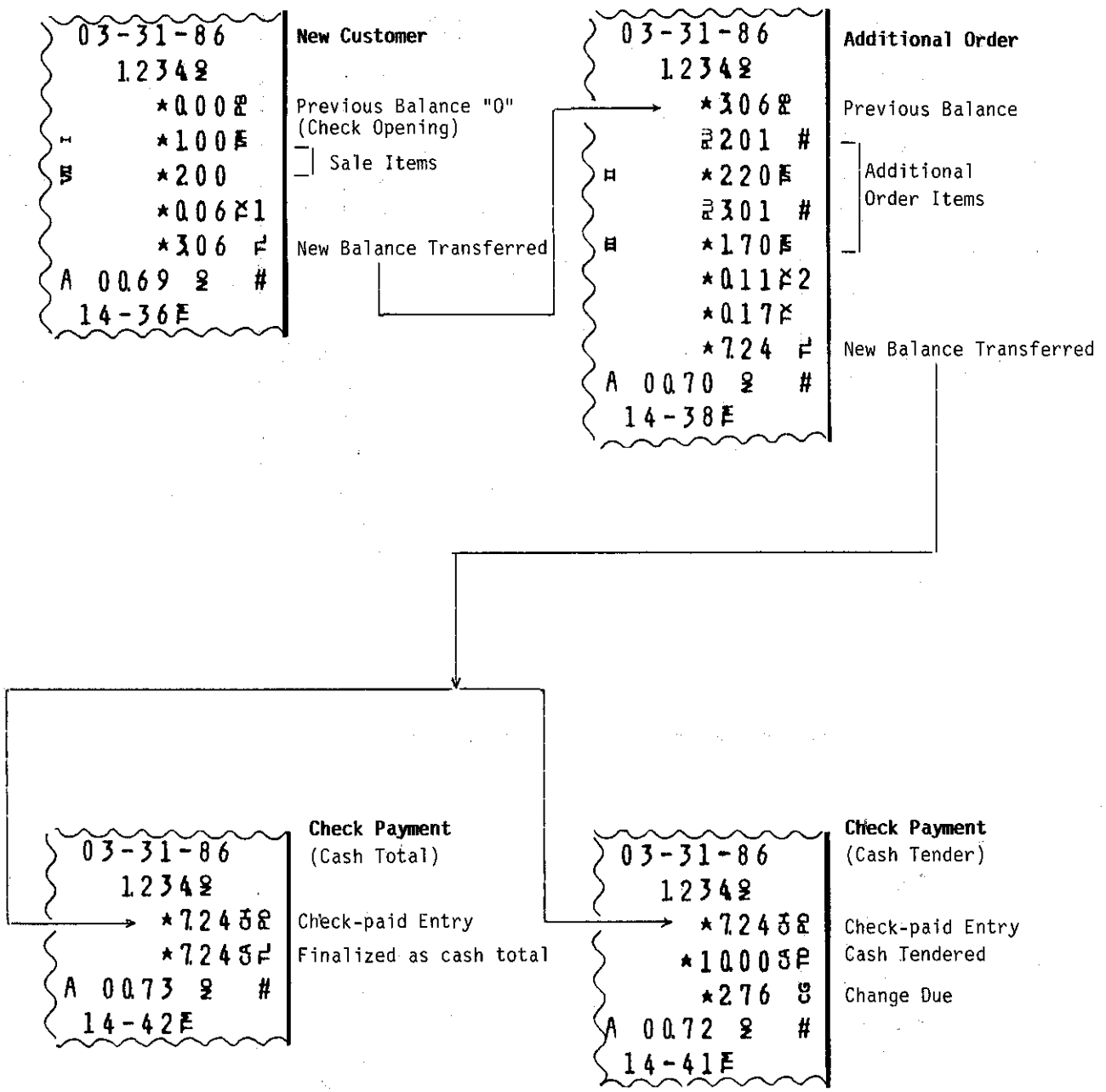
Change due $5.99

DOLLAR DISCOUNT

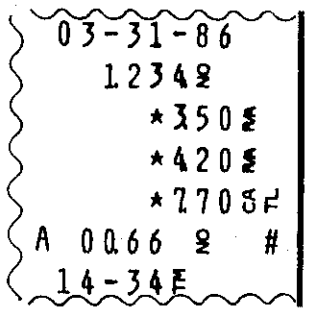
```
 03-31-86
    1234
       *5.00
       *2.50
       *0.50  -
       *0.25 2
       *0.25
       *7.50
A  00.60     #
 14-27
```

Dollar Discount $0.50

PREVIOUS BALANCE, CHECK PAID

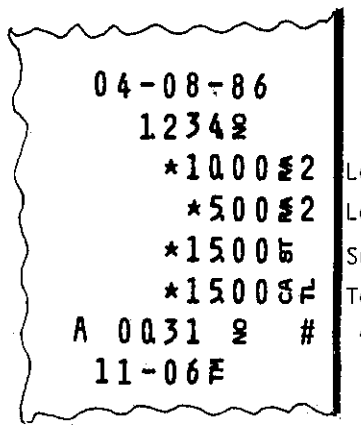


RECEIVED ON ACCOUNT



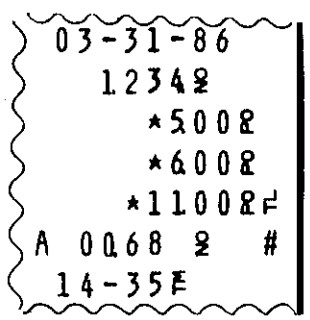
Payment Item $3.50
Payment Item $4.20
Total Amount of Payment received in cash

LOAN



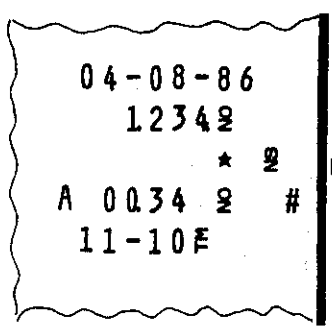
Loan Item Amount
Loan Item Amount
Subtotal
Total Loaned Amount in Cash

PAID OUT



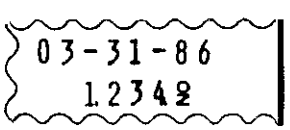
Paid-out Item $5.00
Paid-out Item $6.00
Total Amount Paid Out

NO-SALE



No-sale Symbol

DATE PRINT



Date
Register No.

READ (X) AND RESET (Z) REPORTS

The following table shows the key operation to take each report. The "X" and "Z" reports have exactly the same print content when both are available, except that:

1. The "X" reports allow to read the totals but not clear memories, while the "Z" reports allow to read the totals and at the same time all the resettable memories will be cleared when the reports have been issued.
2. The symbol "X" is printed on the top line of "X" report, while "Z" is printed on a "Z" report, to indicated the type of report.
3. A reset count is printed on the bottom of a "Z" report only.

TABLE OF X AND Z REPORTS

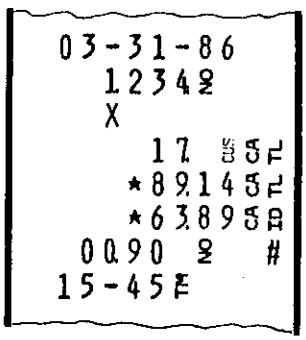
REPORT NAME	Control Lock Position (Z=VOID/Z)	KEY OPERATION	SAMPLE PAGE
INDIVIDUAL FINANCIAL READ		(READ only)	
. Cash Sales and In-drawer*	X	[NS]	26
. Charge Sales and In-drawer*	X	[Chg]	26
. Misc 1 Sales and In-drawer*	X	[MISC TD/1]	26
. Misc 2 Sales and In-drawer*	X	[MISC TD/2]	
. Received on Account 1, 2	X	[R/A]	26
. Paid Out	X	[PO]	26
. Item Correct and Void	X	[IC/VD]	26
. Outstanding Check	X	[PB+]	27
. Percent Discount	X	[%-]	27
. Percent Charge	X	[%+]	27
. Dollar Discount	X	[$ DISC]	27
. Charge Tip	X	[CHG TIP]	27
. Tax Total and Taxable Total	X	[ST/TT]	27
INDIVIDUAL CLERK READ* **INDIVIDUAL CLERK RESET***	X Z	] → Set the Clerk Key of the required clerk to ON. ↓ 1 [AT/TL]	28
INDIVIDUAL PLU READ **INDIVIDUAL PLU RESET**	X Z	] → | PLU Code | [PLU] → ([ST/TT]) → [AT/TL]	29
PLU ZONE READ **PLU ZONE RESET**	X Z	] → | PLU Code | [X] → | PLU Code | [PLU] (zone start) (zone stop)	29
PLU ENTIRE READ **PLU ENTIRE RESET**	X Z	] → [PLU]	29
INDIVIDUAL DEPARTMENT READ **INDIVIDUAL DEPARTMENT RESET**	X Z	] → Depress the required Department Keys, one by one. ([ST/TT] for subtotal.) [AT/TL] to end.	30
DEPARTMENT ENTIRE READ **DEPARTMENT ENTIRE RESET**	X Z	] → 11 [AT/TL]	30
AUTO READ* **AUTO RESET*** (DEPT + FINANCIAL + CLERK) └ Print/Non-print Option └ Print/Non-print Opt.	X Z	] → [AT/TL]	31

NOTES: 1. The cash drawer will open on the last key depression for the reports marked with "*" in the above table.
2. No clerk key is necessary to issue reports except INDIVIDUAL CLERK READ/RESET reports.

-- REPORT PRINT SAMPLES --

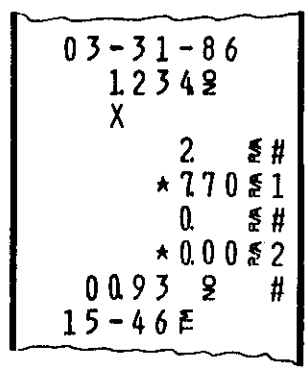
INDIVIDUAL FINANCIAL READ (Control Lock: X Position)

Cash Sales and In-drawer ([NS])



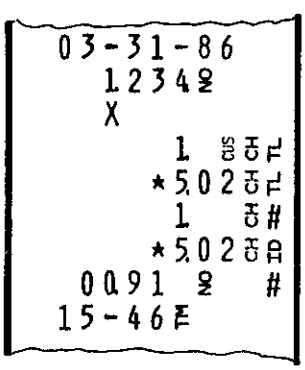
Cash Customer Count
Cash Sales Total
Cash-in-drawer

Received on Account 1, 2 ([R/A])



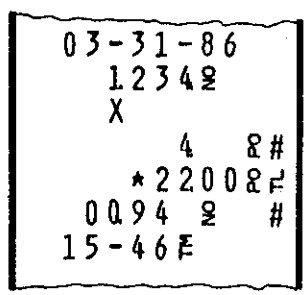
Received on Account Count
" " " Total
Loan Count
" Total

Charge Sales and In-drawer ([Chg])



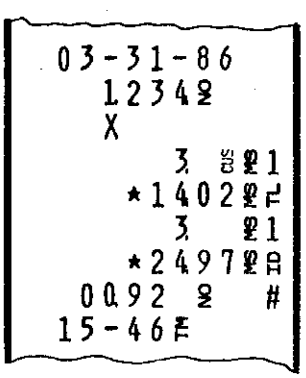
Charge Customer Count
Charge Sales Total
Charge-in-drawer Count
" Total

Paid Out ([PO])



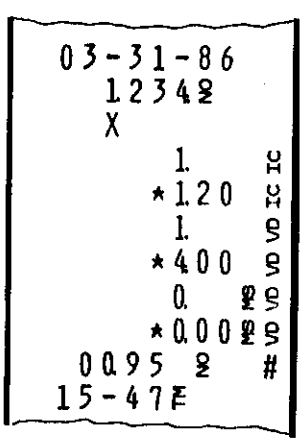
Paid Out Count
" " Total

Misc 1 Sales and In-drawer ([MISC TD/1])



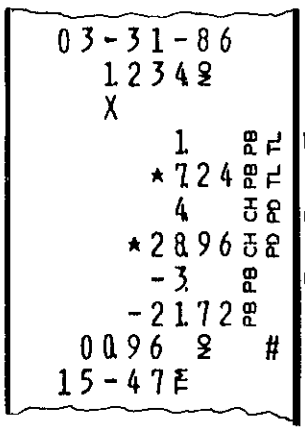
Misc. 1 Customer Count
Misc. 1 Sales Total
Misc.1-in-drawer Count
" Total

Item Correct and Void ([IC/VD])



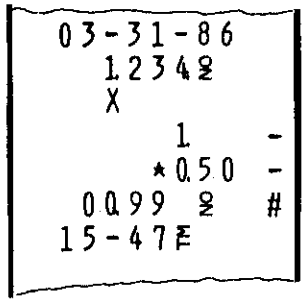
Item Corr Count, " " Total] on Dept or PLU items
Void Count, " Total] on Dept or PLU items
Item Corr/Void Count, " " " Total] on other items

Outstanding Check ([PB+])



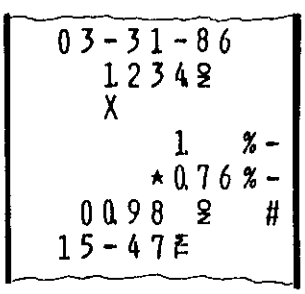
PB Sales Counter
" " Total
Check Paid Counter
" " Total
Outstanding Check Count
" " Total
(Outstanding Check
= PB Sales - Check Paid)

Dollar Discount ([$ DISC])



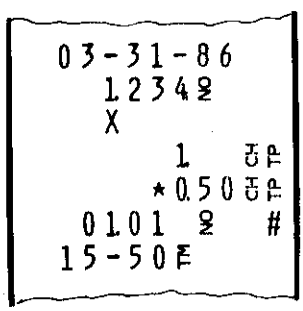
Dollar Disc. Count
" " Total

Percent Discount ([%-])



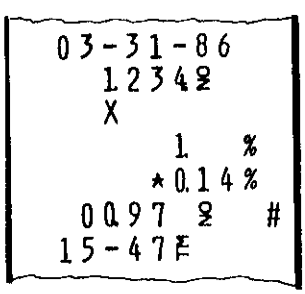
Percent Discount Count
" " Total

Charge Tip ([CHG TIP])



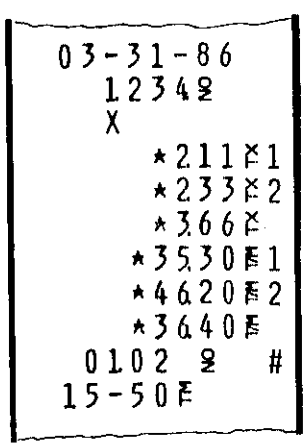
Charge Tip Count
" " Total

Percent Charge ([%+])



Percent Charge Count
" " Total

Tax Total and Taxable Total ([ST/TT])



Tax 1 Total
Tax 2 Total
Tax 3 Total
Taxable Total 1
Taxable Total 2
Taxable Total 3

INDIVIDUAL CLERK READ Control Lock: X
INDIVIDUAL CLERK RESET Control Lock: Z] Set the required Clerk Key to ON, enter 1, depress [AT/TL].

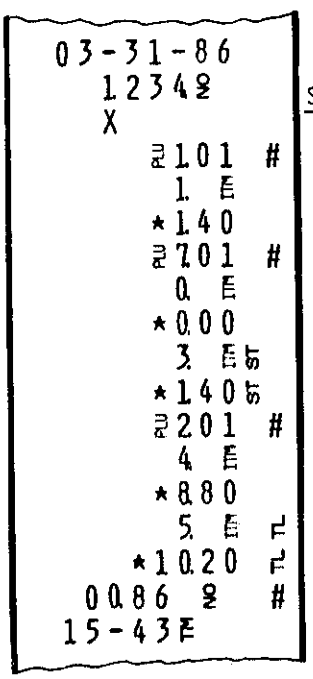
Clerk "A" Reset Report Sample (Control Lock: Z, Clerk "A" Key to ON, 1 [AT/TL].)

```
  03-31-86
     12348
       Z
A  *    51.      #   Clerk ID / Number of Rings
        64.  ITM 0   Gross Sales Item Count
     *1141480        "    "    Total
         1.     %    Percent Charge Count
       *0.14 %       "       "    Total
        62.  ITM 2   Net Sales (without Tax) Item Count
     *1008.842 2     "   "         "       Total
       *2.11 TX1     Tax 1 Total
       *2.33 TX2     Tax 2 Total
       *3.66 TX      Tax 3 Total
        62.  ITM 2   Net Sales (with Tax) Item Count
     *1089.94 2      "   "         "      Total
         2.      -   Doller Discount and Percent Discount Count
       *1.26  -      "                    "         Total
        19.  CUS TL  Total Customer Count
     *108.18  TL     All Media Total
        15.  CUS CA TL  Cash Customer Count
      *89.14 CA TL   Cash Sales Total
         4.  CUS CH TL  Charge + Misc 1 + Misc 2 Customer Count
       *19.04 CH TL    "       "       "     Sales Total
         1.     CH TP  Charge Tip Count
       *0.50  CH TP    "     "  Total
         2.     RA #   Received on Account (R/A 1) + Loan (R/A 2) Count
       *7.70  RA 1      "    "              "    "   "    "     Total
         4.     PO #   Paid Out Count
       *22.00 PO TL    "    "  Total
       *63.89 CA ID   Cash-in-drawer Total
         4.     CH #   Charge + Misc.1 + Misc.2 -in-drawer Count
       *29.99 CH ID     "           "           "       Total
         1.        IC  Item Correct Count
       *1.20     IC    "    "     Total ] on Dept or PLU items
         1.        VD  Void Count
       *4.00      VD   "   Total ] on Dept or PLU items
         0.     VD VD  Item Correct and Void Count
       *0.00   VD VD    "     "     "   "    "  ] on other items (Misc. Void memory)
         0.     RA #   No-sale Count
      Z 0001           Clerk Reset Report Count (not printed on X reports)
A  0106  2       #    Clerk ID / Consecutive No.
  15-53                Current Time
```

PLU READ AND RESET REPORTS

Individual PLU Read or Reset

Control Lock: X or Z,
Enter the required PLU Code, depress [PLU]. This may be repeated. Depress [ST/TT] to obtain subtotal. Depress [AT/TL] to obtain total and end.



Sample Operation (X mode)

101 [PLU]

701 [PLU]

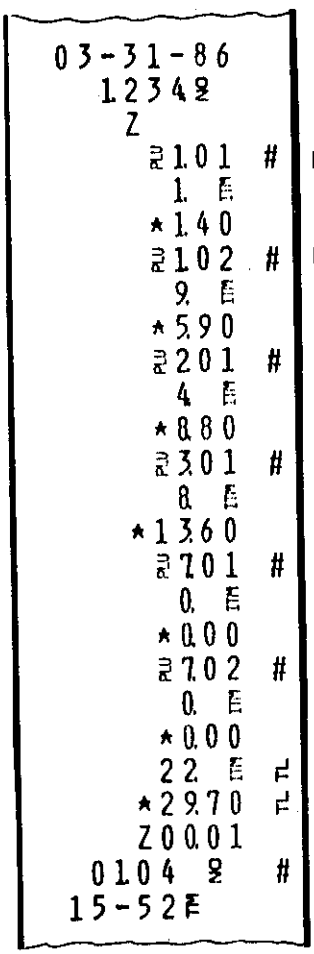
[ST/TT]

201 [PLU]

[AT/TL]

PLU Entire Read or Reset

Control Lock: X or Z, depress [PLU].

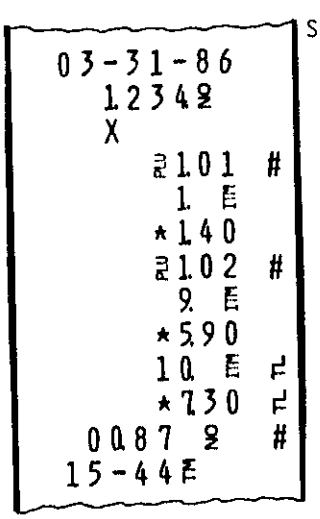


PLU Code No.101
Item Count
Sales Amount
PLU Code No.102
⋮

Total Item Count] of all
Total Amount] PLUs
Reset Count (not print on X reports)

PLU Zone Read or Reset

Control Lock: X or Z,
Enter the zone-start PLU Code, [X], enter the zone-end PLU Code, [PLU].



Sample Operation (X mode)
100 [X] 199 [PLU]
(indicating that the zone to be read is from PLU No.101 to PLU No.199)

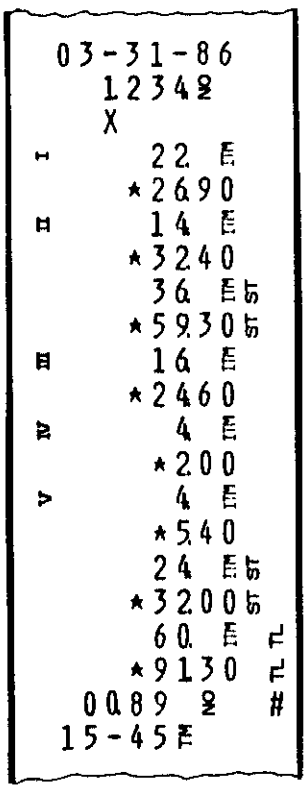
PLU Code No.101
Item Count
Sales Amount
PLU Code No.102
⋮

Total Item Count] of all the PLUs in the designated zone
Total Sales Amount]

NOTE: PLUs with sales data "0" will not be printed on any kind of PLU report.

DEPARTMENT READ AND RESET REPORTS

Individual Department Read or Reset Control Lock: X or Z, depress the required Department Keys, one by one. [ST/TT] to obtain subtotal. [AT/TL] to obtain total and to end.

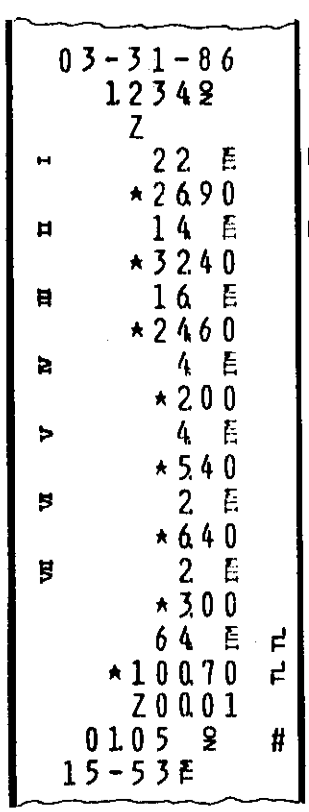


Dept. 1 Item Count
Sales Amount
Dept. 2
Subtotal Item Count] of Depts 1+2
" Amount]
Dept. 3
Dept. 4
Dept. 5
Subtotal Item Count] of Depts 3+4+5
" Amount]
Total Item Count] of all the Depts read in this report.
Total Amount]

SAMPLE OPERATION

[DEPT 1]
[DEPT 2]
[ST/TT]
[DEPT 3]
[DEPT 4]
[DEPT 5]
[ST/TT]
[AT/TL]

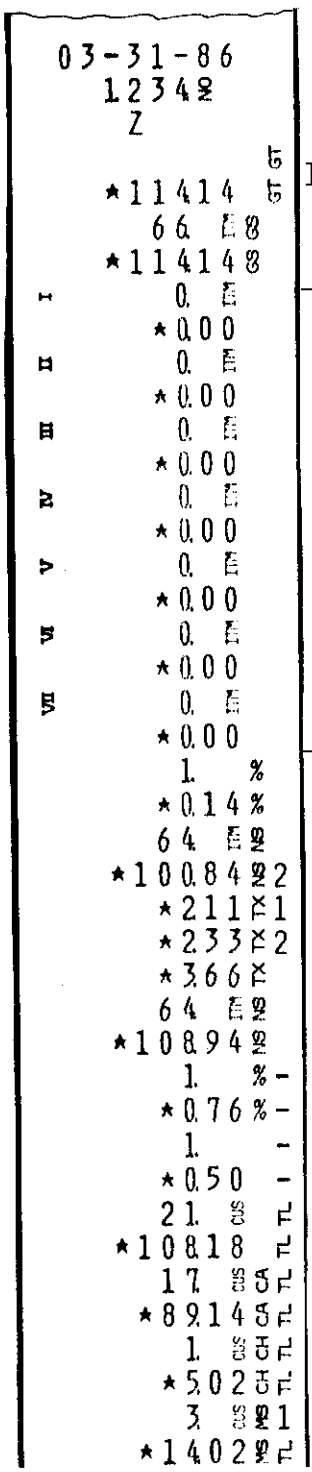
Department Entire Read or Reset Control Lock: X or Z, enter 11, depress [AT/TL]



Dept. 1 Item Count
Sales Amount
Dept. 2
:
Total Item Count] of all Departments
Total Amount]
Department Reset Report Count (not print on X reports)

AUTO READ Control Lock: X
AUTO RESET Control Lock: Z] depress [AT/TL]

Auto Reset Report Sample



"X" is printed on Read Report

] Grand Total (non-resettable)

Gross Sales Item Count
Total

Department Report (refer to page 30)
NOTES: 1. The Department Report portion of the Auto Read/Reset Report can be programmed to non-print.
2. If DEPARTMENT ENTIRE RESET report has already been taken, all departments' data show "0" in AUTO READ/RESET report, as in this sample.
3. The Department Memory can be programmed to reset or non-reset when the Auto Reset Report has been taken.

Percent Charge Count
Total

Net Sales (without Tax) Item Count
Total

Tax 1 Total

Tax 2 Total

Tax 3 Total

Net Sales (with Tax) Item Count
Total

Percent Discount Count
Total

Dollar Discount Count
Total

Total Customer Count

All Media Sales Total

Cash Customer Count

Cash Sales Total

Charge Customer Count

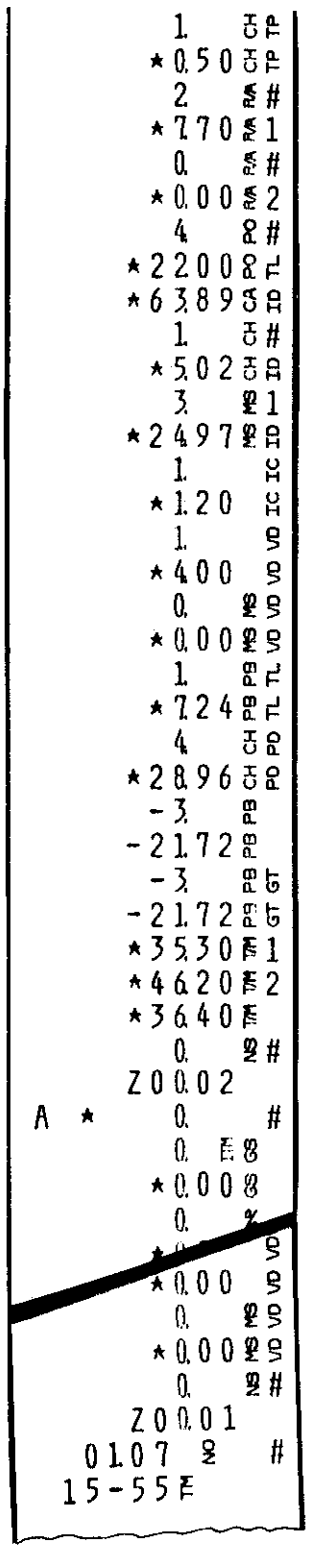
Charge Sales Total

Misc 1 Customer Count

Misc 1 Sales Total

-- to be continued --

-- Continued --



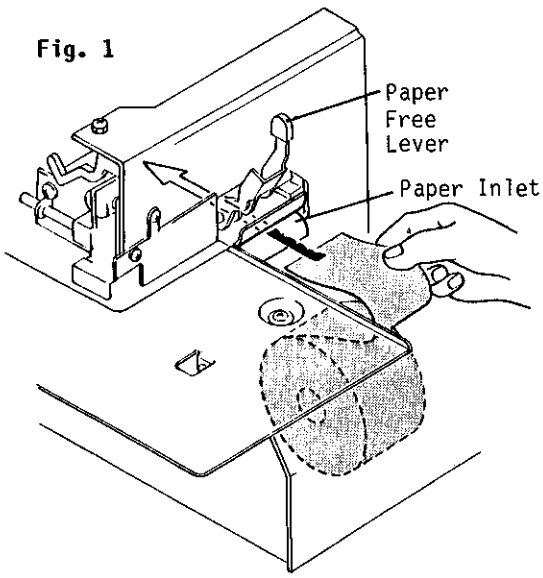
Charge Tip Count
Total
Received on Account (R/A 1) Count
Total
Loan (R/A 2) Count
Total
Paid Out Count
Total
Cash-in-drawer Total
Charge-in-drawer Count
Total
Misc 1-in-drawer Count
Total
Item Correct Count
Total] on Dept and PLU items
Void Count
Total] on Dept and PLU items
Item Correct and Void Count
Total] on other items (Misc Void)
PB Sales Count
Total
Check Paid Count
Total
Outstanding Check Count
Total] (PB Sales - Check Paid)
Non-resettable Outstanding Check Count
Total
Taxable Total 1
Taxable Total 2
Taxable Total 3
No-sale Count
Financial Reset (Auto Reset) Report Count (not print on Read reports)

Individual Clerk Reports (refer to page 28)

NOTES: 1. The Clerk Report portion of the Auto Read/Reset Report can be programmed to non-print.
2. If an INDIVIDUAL CLERK RESET report has already taken, the clerk's data show "0" in this report, just as in this sample.
3. The Clerk Memory can be programmed to reset or non-reset when the Auto Reset Report has been taken.

JOURNAL ROLL REPLACEMENT AND OTHER MAINTENANCE OPERATIONS

Fig. 1



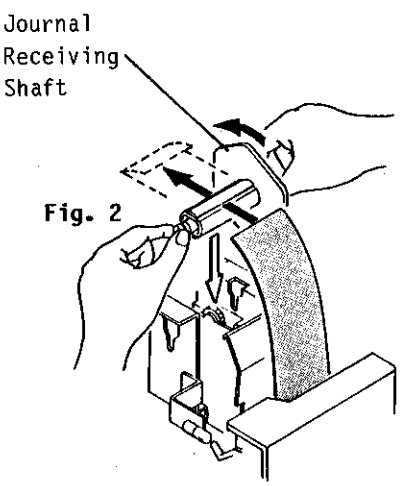


Fig. 2

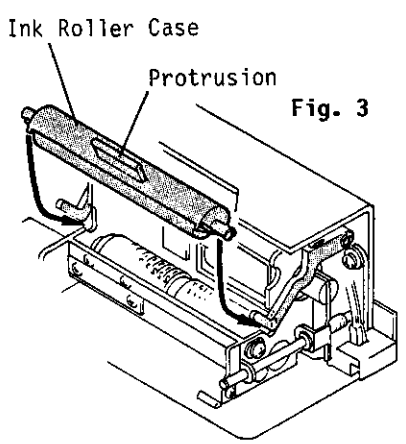


Fig. 3

REPLACING THE JOURNAL PAPER ROLL

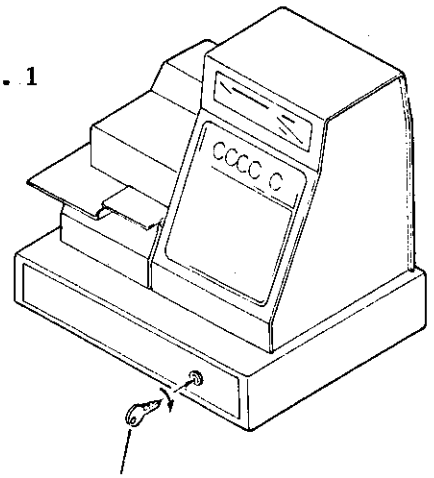
1. Open the Paper Cover.
2. Depress the [JF] key to advance the journal tape until unprinted part of paper comes out of the Journal Paper Guide (the other side of the Paper Inlet).
3. Lift the printed journal together with the Journal Receiving Shaft and cut the journal at the edge of the Journal Paper Guide.
4. Remove the printed journal out of the Journal Receiving Shaft by sliding the roll outward.
5. Replace the existing journal paper roll with a new one if not enough unprinted portion remains.
6. Fold the end of the paper squarely about 6 inches and insert it into the Paper Inlet. (Fig. 1)
7. Depress the [JF] key to advance the tape about 8 inches.
8. Insert the end of the tape into the slot of the Journal Receiving Shaft and wrap it on the shaft twice to secure the tape. (Fig. 2)
9. Place the Journal Receiving Shaft into the receptacle so that the shaft gear engages with the journal take-up motor gear.

REPLACING THE INK ROLLER

When the print data are too light to read, it is time to replace the ink roller.

1. Open the Paper Cover.
2. The Ink Roller Case is located at the rear side of the paper inlet.
3. To remove, hold the protrusion of the Ink Roller Case and pull it up.
4. Install a new Ink Roller Case into the receptacle by following the reverse order to removing. Press it in until a "click" is heard. (Fig. 3)

Fig. 1



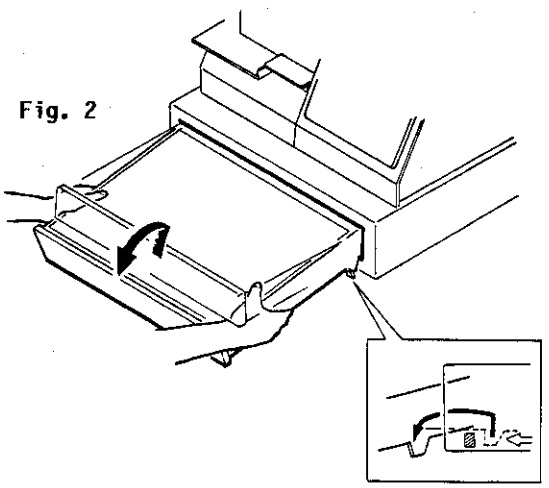
Drawer Release Key

MANUAL DRAWER RELEASING

The drawer opens automatically when a registration is performed. In the event of a power failure or other troubles the drawer can be opened manually in the following manner:

1. Insert the Drawer Release Key into the drawer release lock and turn the key clockwise. The drawer will now open. (Fig. 1)
2. The Drawer Release Key can be taken out by returning it to the original position.
3. When the drawer is closed, it is automatically locked and will not open without the Drawer Release Key or normal registering operation.

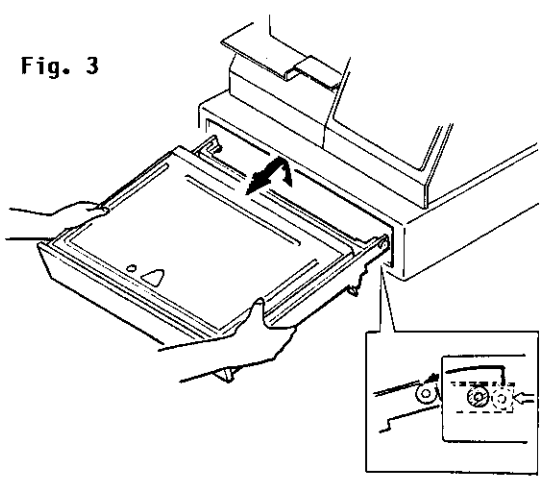
Fig. 2



REMOVING THE DRAWER

1. Pull the drawer out, and when it stops by the stopper, lift the drawer up and pull it again. (Fig. 2) When it stops again by the roller fixed in the drawer case, lift it and pull it again. (Fig. 3).
2. When returning the drawer, follow the reverse procedure to removing.

Fig. 3



CDC (Cash Drawer Cover) LOCK

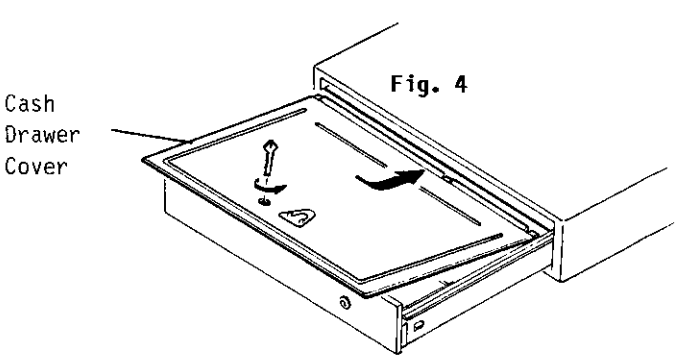
Locking (Fig. 4)

1. Push the Cash Drawer Cover to the drawer-end.
2. Press the cover lightly, insert the key into the key-hole on the cover, and turn it to lock.

Opening

Release the lock by the key, and lift the front end of the cover.

Fig. 4



SPECIFICATIONS

SIZE	460mm(width) x 400mm(depth) x 440mm(height) 18.1" 15.7" 17.7"
WEIGHT	21.5 kg
POWER REQUIRED	AC117V 50/60Hz
POWER CONSUMED	0.4A at 117V
SIZE OF JOURNAL TAPE	38mm(width) x 70mm(diameter)
AMBIENT TEMPERATURE	$0^{\circ}C$ ($32^{\circ}F$) to $40^{\circ}C$ ($104^{\circ}F$)

YOUR TEC REPRESENTATIVE: _____

ADDRESS: _____

TELEPHONE: _____

-- MEMO --

)

)

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+5VSW

The +5VSW circuit receives the ACL0 signal as an input as shown in Fig. 5.8. When ACL0 goes high, it outputs 5V. The output is connected to the pull-up resistor for each output port of the CPU and PRC.

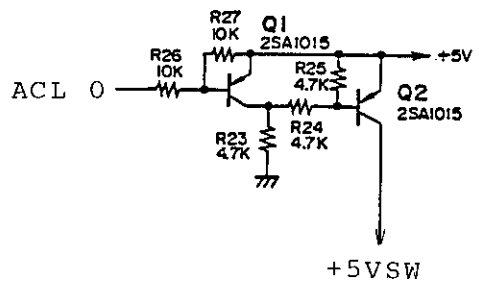

Fig. 5.8
+5VSW Circuit

The reason why this circuit is required is described below. When ACL0 is at the low level (the CPU and PRC are reset), the output ports of the CPU and PRC become unstable. So this circuit stops application of +5V while the CPU and PRC are reset, to prevent malfunction of the ROM, RAM and printer due to transmission of unnecessary signals.

The timing and voltage values of the above outputs are shown in Fig. 5.9 and Table 5.1, respectively.

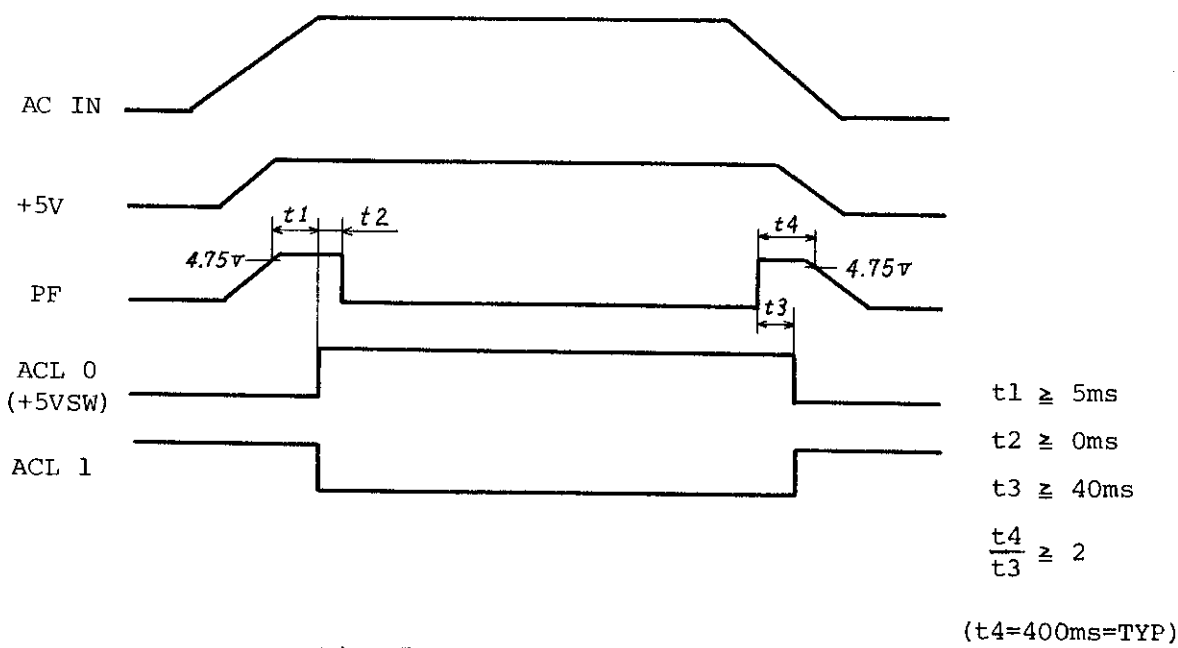

Fig. 5.9 PS Timing Chart

Table 5.1 PS Output Voltage

Symbol	Voltage (V)	Supplied to:	Note
+5V	+4.75~+5.25	ICs	
-5V	-4.5~-5.5	Display control IC	
-VD	-38~-46	Display tube grids	
VF1,VF2	AC4.5~6.5	Display tube filaments	Effective value
BATTERY	+2.4V min.	RAM, timer (at power failure time)	RAM holding voltage (28 pin voltage): 2.0V min.
VM	AC22~26	Printer, drawer, buzzer	Effective value (TYP: 24V)

6. DISPLAY

An HMCS-45A is used for the display controller indentified by IC8. Receiving the 4 bit parallel display data sent through connector CN3, it displays the same contents (10 digits) on the FIU and BIU and controls the buzzer.

After being input to the display controller, the display data from the CPU is output from each port as the segment plate signals and the grid signal for each digit. These signals are amplified by IC1 to IC6 and then sent to the FIU and BIU in parallel. The buzzer control signal is output from the D1 port and is driven by IC7 and transistor Q1.

There are six types of power supplies to be delivered to the display: -5V, +5V, -VD, VF1, VF2, VM. They are sent from the power supply unit through connector CN3. +5V and -5V are used as power supplies for the ICs, -VD, VF1, and VF2 as power supplies for the fluorescent display tube, and VM for driving the buzzer.

Table 6.1 lists the port functions of the printer controller.

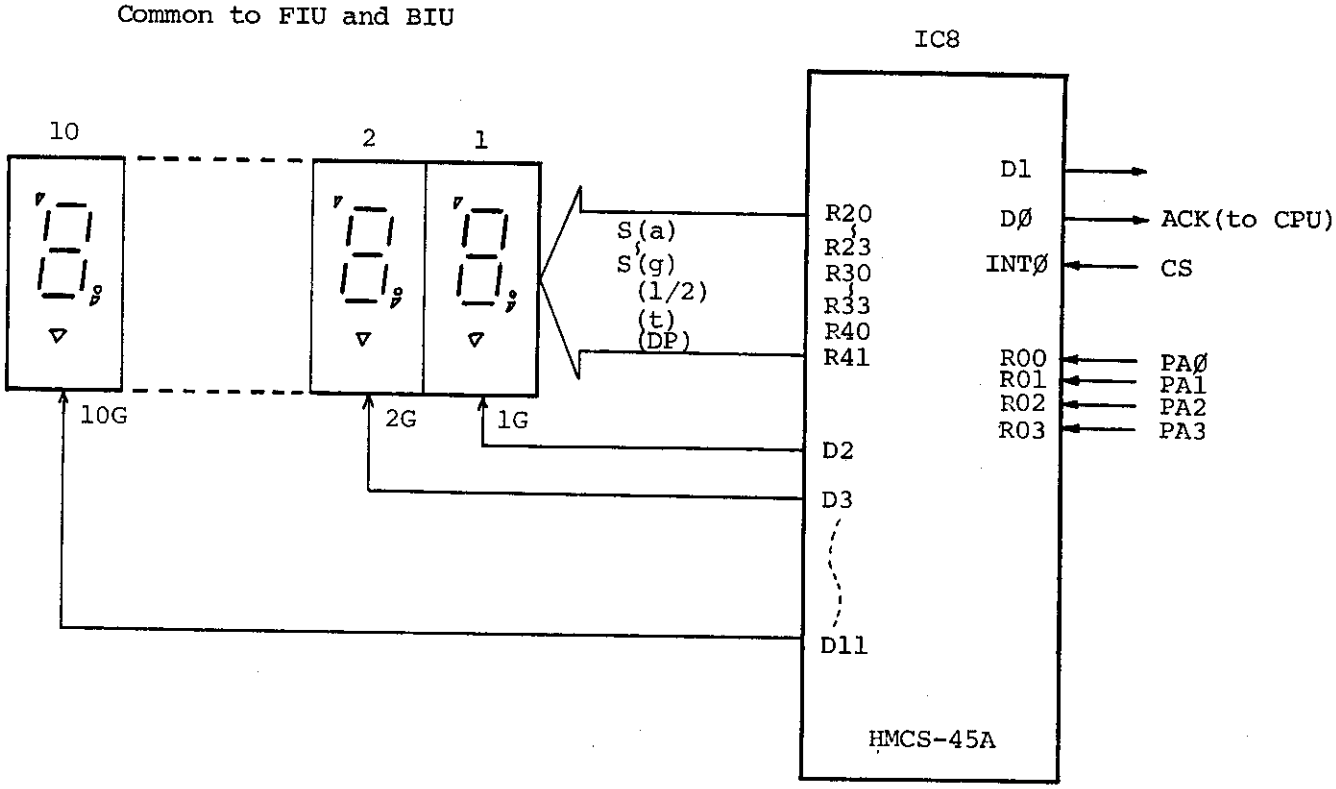

Fig. 6.1 Display Circuit Block Diagram

Table 6.1 DSP Controller Port Functions

Port	Signal Name	Function	Active Level
D0	ACK	Acknowledge signal to be sent to the CPU	H/L
D1	BUZZER	Buzzer Drive signal	H
D2	1G	To the grid of each digit of the FIU and BIU	↓
D3	2G		
D4	3G		
D5	4G		
D6	5G		
D7	6G		
D8	7G		
D9	8G		
D10	9G		
D11	10G		
D12~15	NC		-
R00	PA0	4 bit parallel display data inputs	-
R01	PA1		-
R02	PA2		-
R03	PA3		-
R10~13	NC		-
R20	S (a)	To each segment plate of the FIU and BIU	H
R21	(b)		↓
R22	(c)		
R23	(d)		
R30	(e)		
R31	(f)		
R32	(g)		
R33	(1/2)		
R40	(t)		
R41	(Dp)		
R42,43	NC		-
R51~53	NC		-
R60~63	NC		-
RST	ACL	Auto Clear signal input	H
INT0	CSDSP	Chip Select signal input	-

NC : Not Connected